

Annual Report on Science and Technology Indicators for Belgium **2013**





Annual Report on Science and Technology
Indicators for Belgium
2013

The Annual Report on Science and Technology Indicators for Belgium is published by the Belgian Science Policy Office.

Belgian Science Policy Office
Avenue Louise 231
1050 Brussels
Belgium
Internet: www.belspo.be

Graphic design : polygraph.be

Edited by André Spithoven
ISSN: 2295-3418
Legal Depot: D/2013/9284/1
November 2013

Neither the Belgian Science Policy Office nor any person acting on behalf of the Belgian Science Policy Office shall be responsible for the use which might be made of the information in this issue of the Annual Report on Science and Technology Indicators for Belgium. This work is copyrighted. It may be reproduced whole or in part, subject to inclusion of an acknowledgement of the source and no commercial use or sale.

The views in this report are those of the contributors and do not necessarily reflect the opinions of the Belgian Science Policy Office.

Annual Report on Science and Technology Indicators for Belgium **2013**







Foreword

In the past the Belgian Science Policy Office has provided punctual support to policy makers by offering an overview of indicators on science, technology and innovation. Up to now three editions of Key Data have been produced irregularly since 2001. The current reforms of the Belgian Science Policy Office have paved the way to offer an enhanced effort to monitor the innovation system.

The innovation system of Belgium is seemingly characterized by a paradox. On the input side of the system, as measured by the R&D intensity, the performance fluctuates around the European average. On the output side, however, Belgium belongs to the leading countries when it comes to the number of publications and the quality of research. Although the federal level is responsible for 35% of public means for research and development (R&D), it is acknowledged that the level of funding by the public sector is relatively modest in respect to other countries. A key feature of the innovation system of Belgium is that this federal budget is dispersed over various scientific organisations and administrations. Institutional reforms should remedy the complexities of the system and remove any obstacles to stimulate efficacy at the federal level.

Within the Belgian Science Policy Office reforms have already begun. One of the services concerned is the Scientific and Technical Information Service (henceforth STIS) which is an integrated service with an independent board of governance. Recently, the STIS has been reformed by fusing other activities that resided within the Belgian Science Policy Office. From 2013 onwards the STIS performs two distinct tasks with the aim to inform the science and technology policy at the federal level. First, STIS acts as a collector of data in R&D and innovation that are relevant in the domain of science and technology. Second, STIS acts as an information intermediary between the European Union and the federal scientific institutes.

STIS, as data collector, focuses its attention to collect all relevant data from the regional partners to integrate them into data that represents the efforts on R&D and innovation for Belgium as a whole. The STIS produces the data, always with the input given by the responsible political regional authorities, on (i) the budgetary outlays for R&D; (ii) the data on R&D expenditure and R&D personnel in the business enterprise sector, the government sector, the higher education sector and the private/public non-profit sector; and (iii) the innovative activities. The STIS operates at the federal level in close collaboration with the regional partners that bear the major responsibility in science and technology. STIS co-ordinates the data collection, helps to ensure the application of the internationally agreed methodologies, and communicates these data to international organisations like Eurostat and the OECD.

STIS, as an information intermediary, targets users that are key players in the field of research and innovation. First, it provides information – through the use of websites, newsletters, helpdesk, info sessions and face-to-face meetings – on the European R&D Framework Programme and other related activities (Eurofed). Second, it keeps track of the participation of the Belgian Science Policy Office in projects from the European Research Area (ERAPRO). Third, it provides bibliometric research for external partners, or internal use for the screening of experts for evaluation purposes.

The symbiosis between these two tasks results in a number of policy reports. First, policy reports that tackle the institutional organisation and governance mechanisms of the science and technology domains. In addition, with the insights of international experts, it organises peer review reports on its policy system. Second, data reports on the indicators that are collected aimed at disclosing all data available on R&D activities and innovation. Third, it publishes various research reports: research report series; books; scientific publications; conference proceedings; external and internal research reports.

The STIS supports science and technology policies at national and international levels. First, at the national level it acts as a secretary in the federal cooperation commission on statistics (CFS/STAT); and as a partner in the commission on international collaboration in the inter-ministerial conference for science policy. Second, at the international level it is active in OECD meetings as national experts on STI and in Eurostat task-forces.

This report is a joint effort to inform policy makers and stakeholders of some features of the innovation system. It is hoped that the insights the annual report offers will stimulate an open debate on science, technology and innovation.

Dr. Philippe Mettens
President Belgian Science Policy Office

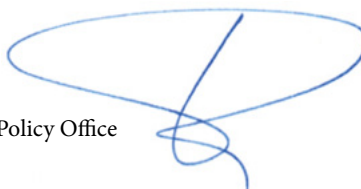


Table of contents

CHAPTER	1	A BIRD'S EYE VIEW – André Spithoven	11
		1.1. Introduction.	12
		1.2. The national innovation system of Belgium	12
		1.3. Country selection for international comparison	16
		1.4. Positioning Belgium through key indicators.	16
		1.5. Structure of the report	19
		References	20
CHAPTER	2	POLICY PRIORITY SETTING: THE GOVERNMENT BUDGET ON R&D – Emmanuel Monard & André Spithoven	21
		2.1. Introduction.	22
		2.2. International comparison of government budgets on R&D	23
		2.3. Government civil R&D budgets by socio-economic objectives	25
		2.4. Government budgets on R&D by the different authorities in Belgium.	27
		2.5. Characteristics of government R&D budgets in Belgium	28
		2.6. Conclusion	30
		References	30
CHAPTER	3	THE INTERNATIONALISATION OF BUSINESS R&D – Julien Ravet & Karl Boosten	31
		3.1. Introduction.	32
		3.2. Internationalisation of R&D in a series of countries	33
		3.3. Foreign-controlled R&D in Belgium	38
		3.4. R&D intensity, foreign control and multinational enterprises	44
		3.5. Conclusion	47
		References	48
CHAPTER	4	R&D FUNDING OF THE PUBLIC SECTOR IN TIMES OF ECONOMIC CRISIS – André Spithoven & Elena Phalet	49
		4.1. Introduction.	50
		4.2. Public R&D expenditure	52
		4.3. Funding of R&D by the public sector.	55
		4.4. Funding of R&D performed by the public sector.	57
		4.5. International comparison of R&D in the public sector	60
		4.6. Conclusion	64
		References	65
CHAPTER	5	PARTICIPATION TO THE SEVENTH FRAMEWORK PROGRAMME – Kristof Vlaeminck	67
		5.1. Introduction.	68
		5.2. The e-Corda database.	69
		5.3. Participation to FP7 in Belgium	70
		5.4. Number of project coordinators	71
		5.5. Success rate of project partners in Belgium.	72
		5.6. Belgian performance in the European context	76
		5.7. Conclusion	80
		References	80

CHAPTER	6	IMPACT OF THE CRISIS ON INNOVATION EXPENDITURES – Jeffrey Malek-Mansour	81
		6.1. Introduction.	82
		6.2. Stylized facts about the crisis.	82
		6.3. Firms' characteristics and innovation expenditures in times of crisis.	84
		6.4. Putting it all together: a model of innovation expenditures growth during the crisis	90
		6.5. Conclusion.	92
		References	92
CHAPTER	7	SCIENTIFIC LITERATURE PRODUCTION – Laurent Ghys	93
		7.1. Introduction.	94
		7.2. Evolution of the number of publications	94
		7.3. Publication density: correcting for country size.	95
		7.4. Belgian share of publication in the EU-27 total by scientific disciplines.	97
		7.5. Publication profile.	99
		7.6. International collaborations measured by co-publications.	100
		7.7. Conclusion.	101
		References	101
CHAPTER	8	LABOUR MARKET CHARACTERISTICS OF DOCTORATE HOLDERS – Karl Boosten	103
		8.1. Introduction.	104
		8.2. Theoretical background and concepts	104
		8.3. Data and methodology.	107
		8.4. Doctorate holders on the labour market	109
		8.5. Empirical analysis	111
		8.6. Shortcomings of the data set and the methodology.	117
		8.7. Conclusion.	117
		References	118
CHAPTER	9	FISCAL MEASURES FOR R&D KNOWLEDGE WORKERS – André Spithoven	121
		9.1. Introduction.	122
		9.2. Target groups benefitting from the R&D measure	123
		9.3. Policy mix and international comparison	125
		9.4. Opinion poll: knowledge and use of the fiscal measure for R&D knowledge workers	126
		9.5. Opinion poll: effects of the fiscal measure for R&D knowledge workers	128
		9.6. Conclusion.	136
		References	136
CHAPTER	10	SCIENCE POLICIES IN 2012-2013: AN OVERVIEW – Ward Ziarko	137
		10.1. Introduction.	138
		10.2. The European agenda	139
		10.3. Policies at federal level in Belgium	146
		10.4. Conclusion.	150
		References	151

